

**INTEGRATED WAVELENGTH DIVISION MULTIPLEXED RECEIVER ARRAY  
HAVING PLUGGABLE TRANSMITTERS**

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority from provisional application number 60/292,187, filed May 18, 2001.

BACKGROUND

[0002] Wavelength division multiplexed hardware can operate multiple different formats. However, it may be difficult to determine in advance which kinds of hardware are necessary for different applications. For example, WDM applications may benefit from scalable transponders. These transponders may operate according to multiple formats. They may operate at different wavelengths, and different wavelength spacings.

SUMMARY

[0003] The present application teaches a special module in which a WDM receiver array with pluggable transmitters is formed. The module enables multiple different transmitter modules to be selectively used and substituted for any others. Any of those may be added or substituted.

A single transponder solution may be used for all of the modules.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0004] These and other aspects will now be described in detail with reference to the accompanying drawings, wherein:

[0005] Figure 1 shows a diagram of a module has assembled to include a plurality of transmitter modules;

[0006] Figure 2 shows a top view of the transmitter modules;

[0007] Figure 3 shows a bottom view of the transmitter modules;

[0008] Figure 4 shows an assembled transmitter module including a cover over the receiver parts.

#### DETAILED DESCRIPTION

[0009] An embodiment is shown in figure 1. Figure 1 shows the basic chassis 100 which may store between 1 and 4 transmitter modules or other modules. A wave locker 105 may be common to the entire chassis assembly. The assembly may also include receiver components 110 such as a receiver array and couplers. A plurality of slide-in WDM

transceiver modules 115,120,125,130 are shown. The system may operate with one or more of these devices.

[0010] The specific transmitter assembly is shown in figure 2. Each transmitter assembly 200 includes a self-contained casing 201. The casing includes a front interface portion 206 as well as a rear connection portion 207. The connection portion 207 may include connector elements which enable connection to receive power and signals from the common components within the housing 100. A heat sink part 205 may be associated with the transmitter module to dissipate the heat produced thereby. The device may also include a connector part 302 as well as orientation and slide assembly 304. The slide assembly 304 may include surfaces such as 305 which maintain the proper registration of the module 200 so that it may align properly and slide properly into the receiving connector on the board. For example, figure 1 shows the slide and interface assembly 304 being connected into a corresponding mating connector 306 on the board. This may have the effect of holding the interface assembly in its connected location.

[0011] Significant advantages may be obtained from the system. The receiver may be associated with multiple changeable transmitters. One or more changeable

transmitters may be used. The system may have significant scalability. For example, the operation may start with one wavelength, and build on that to add other wavelengths and/or other types or schemes of transmission. Inventory management may also be simplified, since many different types of transmission may be contained in the different devices. In addition, since the modules may be easily replaceable, submodule failure may be easily cured by carrying spares. In addition, since each of the different transmitters are physically separated, and contains its own heat sink (heat management part) any overheating caused to one module is not necessarily transmitted to the other modules. Figure 1 shows a small space 116 being left between the modules 115, 120. In this way, a single module overheating might not cause failure of the entire assembly.

**[0012]** Figure 4 shows the entire module with a cover 400 covering the receiver assembly portions 105, 110. This cover may be detachable to expose the underlying modules for removal.